

## C L A I M S

1. A text-processing method characterized by  
2 comprising the steps of:  
3         generating a probability model in which  
4 information indicating which word of a text document  
5 belongs to which topic is made to correspond to a latent  
6 variable and each word of the text document is made to  
7 correspond to an observable variable;  
8         outputting an initial value of a model  
9 parameter which defines the generated probability model;  
10         estimating a model parameter corresponding to  
11 a text document as a processing target on the basis of  
12 the output initial value of the model parameter and the  
13 text document; and  
14         segmenting the text document as the processing  
15 target for each topic on the basis of the estimated  
16 model parameter.
2. A text-processing method according to  
2 claim 1, characterized in that  
3         the step of generating a probability model  
4 comprises the step of generating a plurality of  
5 probability models,  
6         the step of outputting an initial value of the  
7 model parameter comprises the step of outputting an  
8 initial value of a model parameter for each of the  
9 plurality of probability models,  
10         the step of estimating a model parameter

11 comprises the step of estimating a model parameter for  
12 each of the plurality of probability models, and  
13 the method further comprises the step of  
14 selecting a probability model, from the plurality of  
15 probability models, which is used to perform processing  
16 in the step of segmenting the text document, on the  
17 basis of the plurality of estimated model parameters.

3. A text-processing method according to  
2 claim 1, characterized in that a probability model is a  
3 hidden Markov model.

4. A text-processing method according to  
2 claim 3, characterized in that the hidden Markov model  
3 has a unidirectional structure.

5. A text-processing method according to  
2 claim 3, characterized in the hidden Markov model is of  
3 a discrete output type.

6. A text-processing method according to  
2 claim 1, characterized in that the step of estimating a  
3 model parameter comprises the step of estimating a model  
4 parameter by using one of maximum likelihood estimation  
5 and maximum a posteriori estimation.

7. A text-processing method according to  
2 claim 1, characterized in that  
3 the step of outputting an initial value of a  
4 model parameter comprises the step of hypothesizing a  
5 distribution using the model parameter as a probability  
6 variable, and outputting an initial value of a

7 hyper-parameter defining the distribution, and  
8 the step of estimating a model parameter  
9 comprises the step of estimating a hyper-parameter  
10 corresponding to a text document as a processing target  
11 on the basis of the output initial value of the  
12 hyper-parameter and the text document.

8. A text-processing method according to  
2 claim 7, characterized in that the step of estimating a  
3 hyper-parameter comprises the step of estimating a  
4 hyper-parameter by using Bayes estimation.

9. A text-processing method according to  
2 claim 2, characterized in that the step of selecting a  
3 probability model comprises the step of selecting a  
4 probability model by using one of an Akaike's  
5 information criterion, a minimum description length  
6 criterion, and a Bayes posteriori probability.

10. A program for causing a computer to  
2 execute the steps of:  
3 generating a probability model in which  
4 information indicating which word of a text document  
5 belongs to which topic is made to correspond to a latent  
6 variable and each word of the text document is made to  
7 correspond to an observable variable;  
8 outputting an initial value of a model  
9 parameter which defines the generated probability model;  
10 estimating a model parameter corresponding to  
11 a text document as a processing target on the basis of

12 the output initial value of the model parameter and the  
13 text document; and  
14 segmenting the text document as the processing  
15 target for each topic on the basis of the estimated  
16 model parameter.

11. A recording medium recording a program for  
2 causing a computer to execute the steps of:

3 generating a probability model in which  
4 information indicating which word of a text document  
5 belongs to which topic is made to correspond to a latent  
6 variable and each word of the text document is made to  
7 correspond to an observable variable;

8 outputting an initial value of a model  
9 parameter which defines the generated probability model;

10 estimating a model parameter corresponding to  
11 a text document as a processing target on the basis of  
12 the output initial value of the model parameter and the  
13 text document; and

14 segmenting the text document as the processing  
15 target for each topic on the basis of the estimated  
16 model parameter.

12. A text-processing device characterized by  
2 comprising:

3 temporary model generating means for  
4 generating a probability model in which information  
5 indicating which word of a text document belongs to  
6 which topic is made to correspond to a latent variable

7 and each word of the text document is made to correspond  
8 to an observable variable;  
9           model parameter initializing means for  
10 outputting an initial value of a model parameter which  
11 defines the probability model generated by said  
12 temporary model generating means;  
13           model parameter estimating means for  
14 estimating a model parameter corresponding to a text  
15 document as a processing target on the basis of the  
16 initial value of the model parameter output from said  
17 model parameter initializing means and the text  
18 document; and  
19           text segmentation result output means for  
20 segmenting the text document as the processing target  
21 for each topic on the basis of the model parameter  
22 estimated by said model parameter estimating means.

13. A text-processing device according to  
2 claim 12, characterized in that  
3           said temporary model generating means  
4 comprises means for generating a plurality of  
5 probability models,  
6           said model parameter initializing means  
7 comprises means for outputting an initial value of a  
8 model parameter for each of the plurality of probability  
9 models,  
10           said model parameter estimating means  
11 comprises means for estimating a model parameter for

12 each of the plurality of probability models, and  
13 the device further comprises model selecting  
14 means for selecting a probability model, from the  
15 plurality of probability models, which is used to cause  
16 said text segmentation result output means to perform  
17 processing associated with the probability model, on the  
18 basis of the plurality of model parameters estimated by  
19 said model parameter estimating means.

14. A text-processing device according to  
2 claim 12, characterized in that a probability model is a  
3 hidden Markov model.

15. A text-processing device according to  
2 claim 14, characterized in that the hidden Markov model  
3 has a unidirectional structure.

16. A text-processing device according to  
2 claim 14, characterized in the hidden Markov model is of  
3 a discrete output type.

17. A text-processing device according to  
2 claim 12, characterized in that said model parameter  
3 estimating means comprises means for estimating a model  
4 parameter by using one of maximum likelihood estimation  
5 and maximum a posteriori estimation.

18. A text-processing device according to  
2 claim 12, characterized in that  
3 said model parameter initializing means  
4 comprises means for hypothesizing a distribution using  
5 the model parameter as a probability variable, and

6 outputting an initial value of a hyper-parameter  
7 defining the distribution, and  
8           said model parameter estimating means  
9 comprises means for estimating a hyper-parameter  
10 corresponding to a text document as a processing target  
11 on the basis of the output initial value of the  
12 hyper-parameter and the text document.

19. A text-processing device according to  
2 claim 18, characterized in that said model parameter  
3 estimating means comprises means for estimating a  
4 hyper-parameter by using Bayes estimation.

20. A text-processing device according to  
2 claim 13, characterized in that said model selecting  
3 means comprises means for selecting a probability model  
4 by using one of an Akaike's information criterion, a  
5 minimum description length criterion, and a Bayes  
6 posteriori probability.